

Validation of Internet Gratification Scale on Indian Undergraduates using Network Psychometrics

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KEYWORDS

Internet gratification, network psychometrics, exploratory graph analysis, ordinal confirmatory factor analysis, structural consistency.

ABSTRACT:

The Internet Gratification Scale, developed by Dhir et al. (2016), measures the Internet Gratifications among adolescents and is based on six factors of Internet gratifications including Information seeking, Exposure, Connection, Coordination, Entertainment and Social influence. In the present study, the scale was validated using the network psychometrics approach for college students in Indian context. The sample subjects were drawn from degree colleges of Jammu and Kashmir Union Territory of India. A total of 662 students were taken from the colleges including both boys (240) and girls (422). We applied Exploratory graph analysis (EGA) by employing the *EGAnet* package in R/R-Studio, which resulted in the yielding of the five clusters of the scale, wherein the node numbers 17, 18 and 19 getting merged with first cluster. These three items pertained to the 'Exposure' cluster/dimension in the original scale and got merged with 'Information Seeking' cluster/dimension. These three items showing split loading were dropped from the scale and the EGA was run again. The network analysis plot obtained after the second run showed a clear 5-cluster/factor structure including Information Seeking, Connection, Entertainment, Social Influence and Coordination. Thereafter ordinal Confirmatory Factor analysis was done. we used the estimator WLSMV for ordinal level data using *lavaan* package. The analysis revealed the values of CFI, TLI, RMSEA robust and SRMR bentler as 0.982, 0.980, 0.086 and 0.064 respectively which are within the acceptable limits thereby indicate a good fit. Furthermore, edge weight accuracy was calculated through the non-parametric bootstrap confidence interval. The correlation stability coefficient and bootstrapped difference tests were also performed. The plots were generated using the package *qgraph*. Finally, the structural consistency of the clusters was estimated and found to be within the acceptable limits. The educational and psychometric implications of the study are discussed.

Introduction

Internet usage has seen huge surge in the world owing to its widespread expansion offering an alternative platform to a wide variety of services availed otherwise with huge difficulties. Coupled with this increased usage owing to the expansion, there have been complexities in understanding the motives driving the usage. The Internet studies have also changed the focus from looking at the internet as a technological marvel to documenting the internet users and then to the analysis, the ages 10, 5 and 0 Years ago (Wellman 2004). Additionally, the Internet gratifications have been seen to develop a variety of mental health problems including Internet addiction (Dhir, et al 2015, Song, et al 2004, Song 2003) which usually results in compromising with the academic performance of an individual as reported by Nagarjappa (2023), Zubair(2023), Deng et al (2023) Fard (2022), Dou and Shek (2021), Ali, et al, (2019) thereby is a matter of great concern for the academicians and the researchers. So it is important to understand why people engage in different types of internet usage behaviors. Numerous studies have been conducted till date to understand the factor structure of internet gratification. But since the internet is evolving and as such more and more new internet based services are coming into existence, the gratification structure needs to be reexamined and reevaluated. Swanson (1992), has classified Internet gratifications into two types- the content and process gratifications. A number of researchers (Lin, 1999, Larose et al, 2001) applied the Uses and Gratification theory to understand in detail the psychological and behavioral dimensions of internet usage. This theory suggests that media users have an active role in

choosing and using the media and is more interested in understanding in what people do to media instead of what media does to them. Dhir et al (2016) also employed the UGT as the basis of the scale development and based the scale items largely on earlier Uses and Gratification literature. The uses and Gratification presumes that different individuals make use of the media platforms in accordance with their psycho-social needs including the seeking of information, entertainment and socializing with other people (Linn, 1999 and Rubin, 1983). The Internet Gratification scale developed and validated by Dhir et al (2016) accommodated the dimensions of gratification including information seeking, entertainment in accordance with the existing literature and also added three more gratifications including exposure, social influence and coordination as the motives for internet usage, which is very unique to this scale.

The Internet Gratification scale developed and validated by Dhir et al (2016) in Indian context for adolescents is one among the most used scales across the globe by the researchers spanning from academic to internet research. The scale consists of six dimensions having a total number of 27 items. The first factor, Information Seeking (IS) comprises of 7 items, the 2nd factor, Connection (CC) comprises of 6 items, the third factor, Entertainment (ET) of 3 items, the fourth factor, Exposure (EX) of 3 items, the fifth factor, Social Influence (SI) of 5 items and the sixth factor, Coordination (CE) of 3 items.

S.No	Name of the Dimension	Number of Items	Description
01	<u>Information Seeking (IS)</u>	<u>7</u>	<p>'IS1: Internet helps to learn new things'</p> <p>'IS2: Internet helps in getting information about health care'</p> <p>'IS3: Internet helps in doing my school/college work'</p> <p>'IS4: Through Internet, I can get information'</p> <p>'IS5: Through Internet, I can provide others with information'</p> <p>'IS6: Through Internet, I can learn how to do things'</p> <p>'IS7: Through Internet, I learn about the latest news'</p>
02	<u>Connection (CC)</u>	<u>6</u>	<p>'CC1: I use Internet to take part in online chatting or chat rooms/online discussions'</p> <p>'CC2: I use Internet to communicate with friends and family'</p> <p>'CC3: I use Internet to send mails in a matter of minutes'</p> <p>'CC4: I use Internet to make new friends'</p> <p>'CC5: I enjoy talking to other people, so I use Internet'</p> <p>'CC6: I use Internet to gossip or chat'</p>
03	<u>Entertainment (ET)</u>	<u>3</u>	<p>'ET1: I use Internet because it is entertaining'</p> <p>'ET2: I use Internet because it is fun'</p> <p>'ET3: I use Internet because I enjoy it'</p>
04	<u>Exposure (EX)</u>	<u>3</u>	<p>'EX1: Through Internet, one can gather enough information about educational opportunities'</p> <p>'EX2: Internet provides access to career and job opportunities'</p> <p>'EX3: Internet provides wider range of exposure (lot of knowledge/ information)'</p>
05	<u>Social Influence (SI)</u>	<u>5</u>	<p>'SI1: Everyone uses Internet, so why shouldn't I?'</p> <p>'SI2: I use Internet to look fashionable'</p> <p>'SI3: I use Internet to not look old fashioned'</p> <p>'SI4: Internet brings me prestige(status) in my environment'</p>

			<i>'SI5: I like showing my Internet activity to people around me'</i>
06	<u>Coordination (CE)</u>	<u>3</u>	<i>'CE1: I use Internet to arrange/ organize how and when to communicate'</i> <i>'CE2: I use Internet to coordinate and clarify how and when to communicate'</i> <i>'CE3: I use Internet to coordinate a time to instant message each other'</i>

The scale shown in the above table 1.0 above has been validated by Dhir et al (2016) in the Indian context for adolescents. In the present study, the scale has been extended for administration on a fresh population of Indian undergraduate students (Average Age range of 17-22 Years) from different colleges of Jammu and Kashmir Union Territory of India. The validation of the tool is done in the new context by adopting the novel approach of network psychometrics where the ordinal measurement level of the data obtained from Likert scale based questionnaires is acknowledged and the factor extraction, confirmation and reliability analysis are based upon ordinal data based Polychoric correlation using the packages of open ware R/R studio. Network psychometrics approach offers a viable alternative to the traditional psychometric approaches for exploring the structure of the proposed network on the basis of empirical data (Borsboom, 2021). The network approach is based on a complex theory, assuming that the psychological constructs are systems, which are comprised of different components, which interact with each other and their interactions with other systems are difficult to predict owing to their interdependencies. Hence this approach is at suitable distance from the conceptual underpinning of the traditional approaches, which consider the psychological characteristics as latent variables that causes the observable behaviors (Magnavita and Chiorri, 2022).

Methodology

In the present study, the validation of Internet Gratification Scale was done through descriptive cross sectional research design using survey method. The study is based on a sample size of 662 students drawn from different degree colleges of Jammu and Kashmir, Union Territory. The samples were drawn using simple random sampling from around 40 degree colleges of J&K.

Statistical Analysis

The statistical analysis was carried out through the application of Network Psychometrics using the R/R Studio Version 3.3.1. The dimension analysis was carried out using EGA by utilizing the package *EGAnet* (Golino et al., 2020). Both Waltrap and Louvian Community detection algorithms were used. Confirmatory factor analysis was conducted using *lavaan* and the *Psych*, packages, using the estimator "WLSMV" for ordinal data, and for estimating robust goodness of fit estimates. The study employed network analysis using non-parametric bootstrap confidence interval. The correlation stability coefficient and bootstrapped difference tests were conducted to study the significance of the obtained estimates using the package *bootnet*. Along with structural consistency, the dimension and item stability was also studied.

Results:

i. Dimension Analysis:

The first step in the validation process comprises of dimension analysis which involves the identification of clusters as is being done using EFA in the classical approach. The analysis was done using Exploratory Graph Analysis, which deals with the identification of the number of clusters (factors) in the network by maximizing the number of connections within a set of nodes, while minimizing the connections from the same set of nodes to the other set of nodes through community detection algorithms. The nodes represent the items in the network, while the connections between nodes are called edges, which represent the regularized partial correlations between the nodes after conditioning on all the other nodes in the network. Thus the communities represent the stable and coherent sub-network within the overall network. The

Exploratory Graph Analysis was done using EGAnet function in the EGAnet R Package. After importing the data set, the function was run on R, which yielded a network comprising of 5 clusters/dimensions as against to that of a 6-dimension structure revealed in the original scale. However, the item numbers 17, 18 and 19 of dimension 4(Exposure) loaded on dimension 1 (Information Seeking). Thus the dimension analysis using EGA in the R, revealed the five communities of the scale, with node numbers 17, 18 and 19 getting merged with first cluster/dimension. These three items pertained to the 'Exposure' cluster/dimension in the original scale and got merged with 'Information Seeking' cluster/dimension. The EGA trial first results are shown in Fig.1 below.

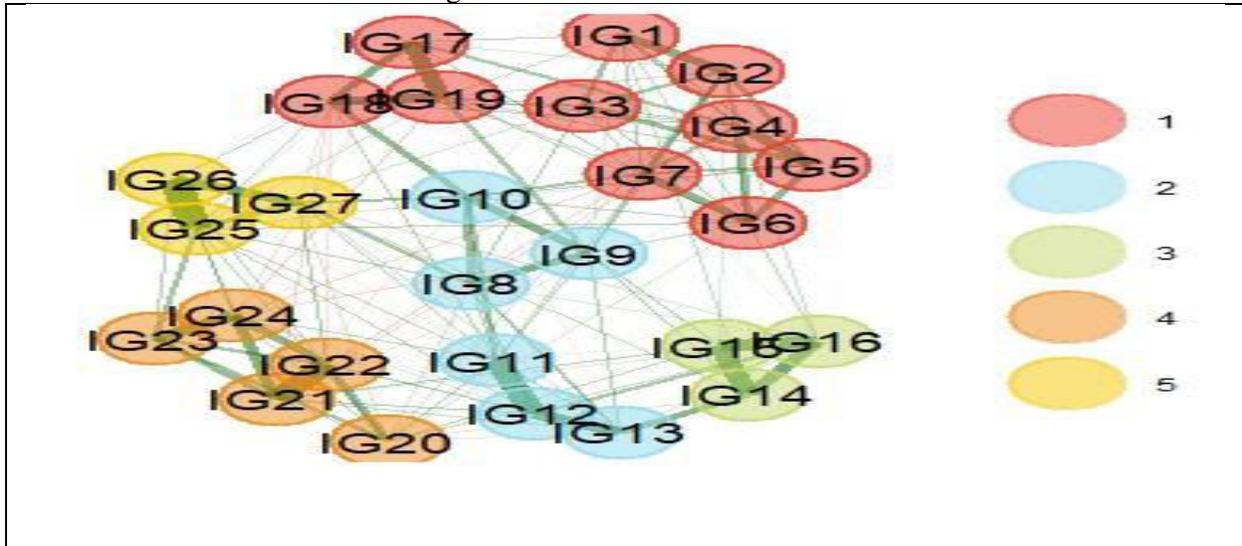


Fig.1: Initial Network Plot

The first EGA run was followed by a 2nd EGA run after the three items (17, 18 and 19) showing split loading were dropped. The network analysis plot obtained after the second run showed a clear 5 community/cluster/factor structure including Information Seeking (7 nodes), Connection (6 nodes), Entertainment (3 nodes), Social Influence (5 nodes) and Coordination (3 nodes). The network plot emerging from the 2nd EGA run is plotted below and shows a clear 5 factor structure as shown below in Fig 2.

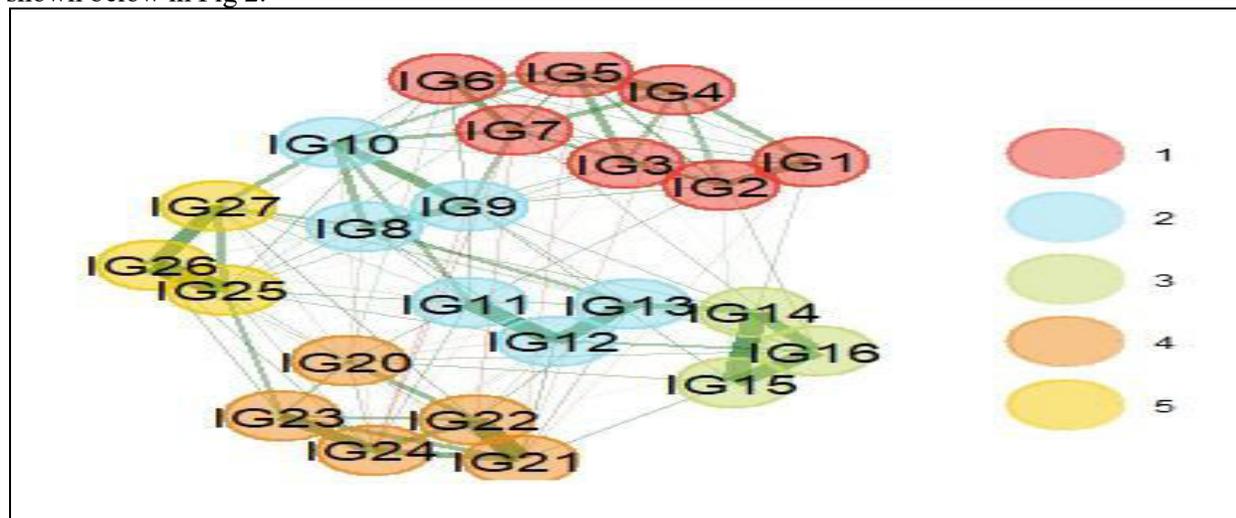


Fig.2: Final Network Plot of Internet Gratification Scale

The above Final Network Plot showing dimensions extracted using EGA. The color of the nodes represents the dimensions and the thickness of the lines represent the partial correlations (green = positive; red = negative).

The final network plot clearly shows the extraction of 5 Factors with each factor showing an item structure in the form of nodes. Exploratory Graph analysis adapts to the inclusion of the Louvain community detection algorithm (Blondel, Guillaume, Lambiotte, & Lefebvre, 2008), which has demonstrated better performance in identifying dimensions (Christensen, 2020). However, it is pertinent to mention that we estimated the dimensions of the network using both the Walktrap algorithm as well as the Louvain algorithm. The resultant network using both the community detection algorithms yielded similar cluster structure.

Estimates of Node Strength/Network Loading

The network loading represents each nodes contribution to the production of a coherent dimension (cluster) in the network (Christensen and Golino,2020). Node strength, the sum of the connections of the node are roughly redundant with CFA factor loadings (Hallquist et al, 2019). The network loadings hence represent a very complex structure that lies in between the saturated structure (EFA) on one side and the simple structure(CFA) on the other side.We employed the *net.loads* function to compute the standardized node strength of each node for each cluster in the emergent network. The network loadings of different items against each dimension is shown in the table below:

Table 1: Estimates of Network Loading

	1	2	3	4	5
IG5	0.348427946	0.041569928	0.000000000	-0.007705642	0.016502279
IG4	0.342863634	0.005215451	0.020533423	-0.008055649	0.000000000
IG2	0.296657603	0.048167879	0.004512860	0.007029490	0.000000000
IG7	0.295232606	0.095341051	0.000000000	-0.030677915	0.000000000
IG6	0.288815034	0.055825368	0.023939042	0.006545624	0.042207328
IG1	0.267295469	0.009567528	0.016281317	-0.003998253	0.001178831
IG3	0.249064636	0.035481865	0.001431533	0.000000000	0.029503034
IG12	0.000000000	0.348803673	0.052655221	0.045178989	0.032174002
IG11	0.011283141	0.294641592	0.000000000	0.046560871	0.066242271
IG8	0.027337040	0.254321106	0.006296971	0.005872836	0.095969600
IG13	0.000000000	0.245255002	0.134724410	0.055960125	0.009608938
IG9	0.110254422	0.229345714	0.082200694	-0.012709969	0.000000000
IG10	0.129041751	0.198324019	0.000000000	-0.003371526	0.079710044

IG15	0.003017661	0.030633499	0.425687457	0.062562903	0.000000000
IG14	0.010886997	0.109857053	0.379536952	0.005366771	0.031711517
IG16	0.030695103	0.052780000	0.376227716	0.024616052	0.014249413
IG22	-0.011506116	0.033899971	0.000775617	0.414319293	0.039021570
IG21	-0.015400878	0.045500232	0.047919349	0.401969920	0.003345238
IG24	-0.016303995	0.041725601	0.000000000	0.352945717	0.040801909
IG23	0.000000000	0.000000000	0.000000000	0.319070165	0.103102794
IG20	0.011630128	0.031152162	0.069876119	0.161813392	0.048496110
IG26	0.004744402	0.009074997	0.000000000	0.071578084	0.468349948
IG25	0.056876107	0.078897575	0.001267113	0.081251168	0.373567494
IG27	0.000000000	0.116920416	0.046113362	0.036068320	0.246433355

The network loadings, like that of factor loadings in EFA represent how well an item belonging to a particular factor/dimension is related to it. While analyzing the network loadings matrix, shown above, it was observed that the network loadings significantly differ for different items. In network psychometrics, these represent partial correlation values and hence the values are actually significant. According to Christensen and Golino(2022), the network loading thresholds are: 0.15= Small network loading, 0.25 Moderate network loading, 0.35= Large network loading.

As per the results shown above, the perusal of network loadings shows that the items contained within their respective dimensions, show moderate to large network loadings, thereby we can say that these nodes represent their clusters quite well. However, a few items show small network loadings (Item No's 2,3 &6 of Connection dimension, Item-1 of Social Influence dimension). However, it should be borne into mind that the network loadings do not necessarily correlate to the interpretation of factor loadings and actually represent, the contribution of a particular node in leading to its respective cluster. Hence the items showing small network loadings need not to be necessarily removed. By this interpretation, the nodes have been considered, and the final network yielded after the 2nd Trial of EGA showing 5 cluster and 24 node structure has been retained.

ii. **Confirmatory Factor Analysis**

To confirm the above obtained factor structure, we used computation of fit measures using *lavaan* package. The factor structure shown in Fig 3 below was revealed.

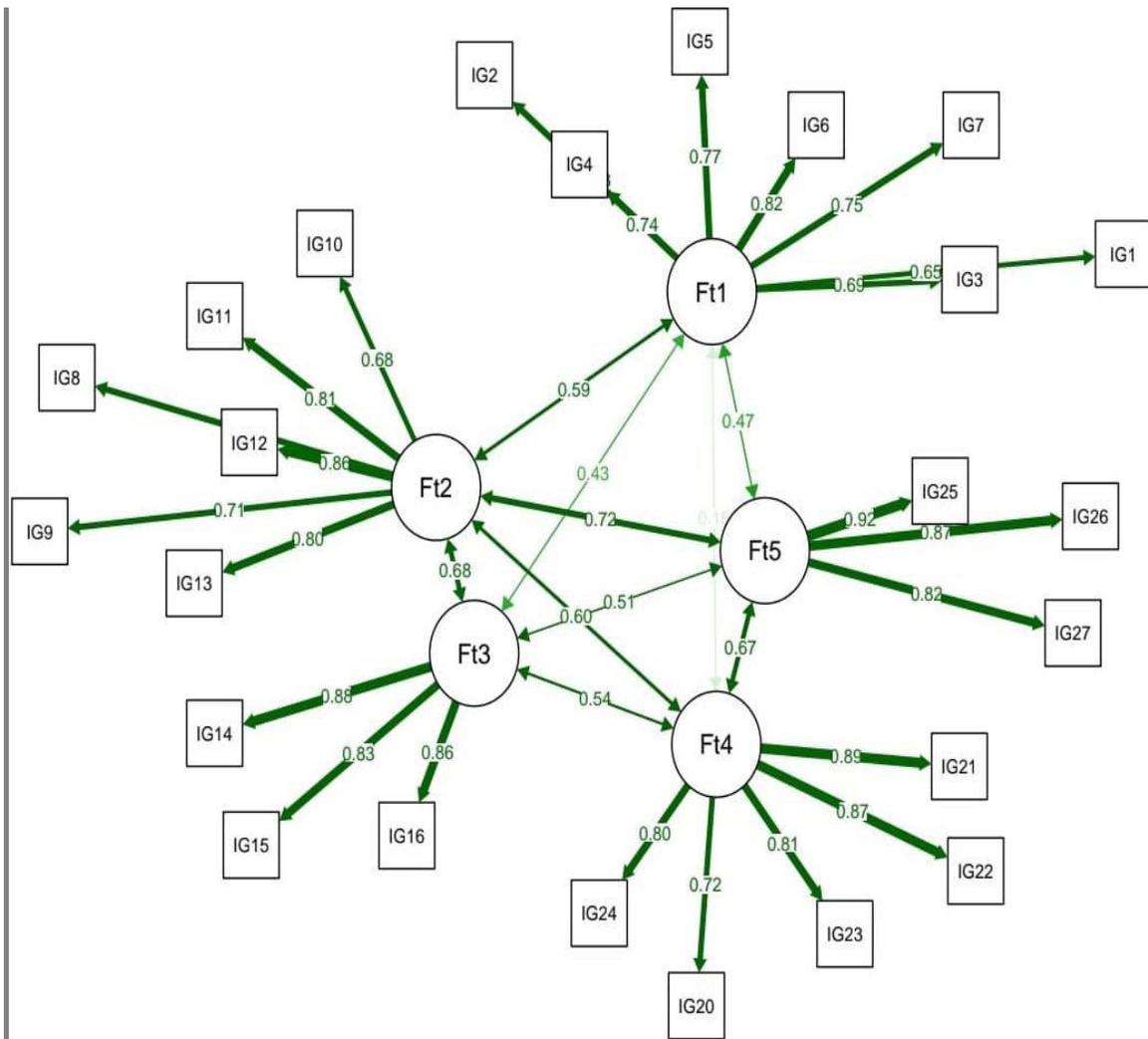


Fig.3: Ordinal Confirmatory Factor Analysis Structure of the Internet Gratification Scale.

Table 2: Goodness of Fit Estimates of the Ordinal Confirmatory Factor Analysis

	CFI (For Interval Data)	Robust CFI (For Ordinal Data)	TLI (For Interval Data)	Robust TLI (For Ordinal Data)	RMSEA (For Interval Data)	Robust RMSEA (For Ordinal Data)	SRMR (For Interval Data)	SRMR (For Ordinal Data)
Benchmark	>0.95	>0.95	>0.95	>0.95	<0.05	<0.05	<0.08	<0.08
Study Estimates	0.982	0.887	0.980	0.871	0.086	0.088	0.074	0.064

The result estimates yielded in the study as shown in the above table fall well within the respective benchmarks as per the goodness of fit standards set by Hu and Bentler (1999). Thus the results confirm the 5-dimensional network structure of the internet gratification scale as yielded in the Exploratory Graph Analysis.

Estimation of Regularized Network

The regularized network estimation requires installation of *bootnet* package. The results of the regularized network is shown in Fig 4 as under.

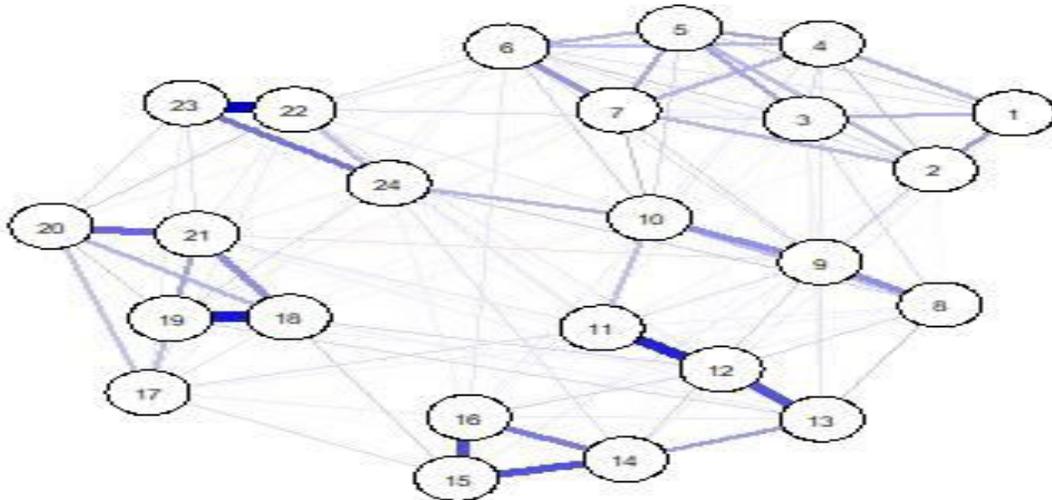


Fig.4.:Regularized Network of Internet Gratification Scale

As it is clear from the edge weights, the nodes of all the five clusters show more relationships within and less relation with the nodes of the other dimensions. As clearly evident, nodes 1,2,3,4,5,6 and 7 belonging to Dimension-1 of Internet Gratification scale are much interrelated as compared to their interrelation with the nodes of the dimension-2. Similarly, the nodes of the dimension 2 including nodes 8, 9, 10, 11, 12 and 13 also much interrelation in between as compared to the nodes 14, 15 and 16 of dimension 3 and so on is the case with all the nodes of the rest of the dimensions in the scale.

iii. Internal Consistency Analysis/Structural Consistency Analysis

In the classical approaches, the commonly used measure for the assessment of unidimensionality and internal consistency is Cronbach's alpha. It has been one of the most pervasive methods for establishing internal consistency of the scale (Mcneish, 2018). However, despite this pervasiveness, there is a sort of ambiguity on the understanding of internal consistency, which measures the extent of the items in a dimension to which they are interrelated and the homogeneity, denoting the set of items having a common cause. With this perspective in mind, the current study employed the measurement of Structural Consistency, which is a measure of the extent to which the items in a dimension are homogenous and are interrelated, given the multidimensional structure of the tool under Network Psychometrics (Christensen, 2019). The same has been performed using Bootstrap Exploratory Graph Analysis using the function *bootEGA*. We approached the structural consistency analysis with the installation of *bootEGA* package. The following results were yielded after the dimension stability function.

Table 3: Structural Consistency Values (Dimension Wise)

Dimension	Structural Consistency
1	1.000
2	0.880
3	0.990
4	0.988
5	0.998

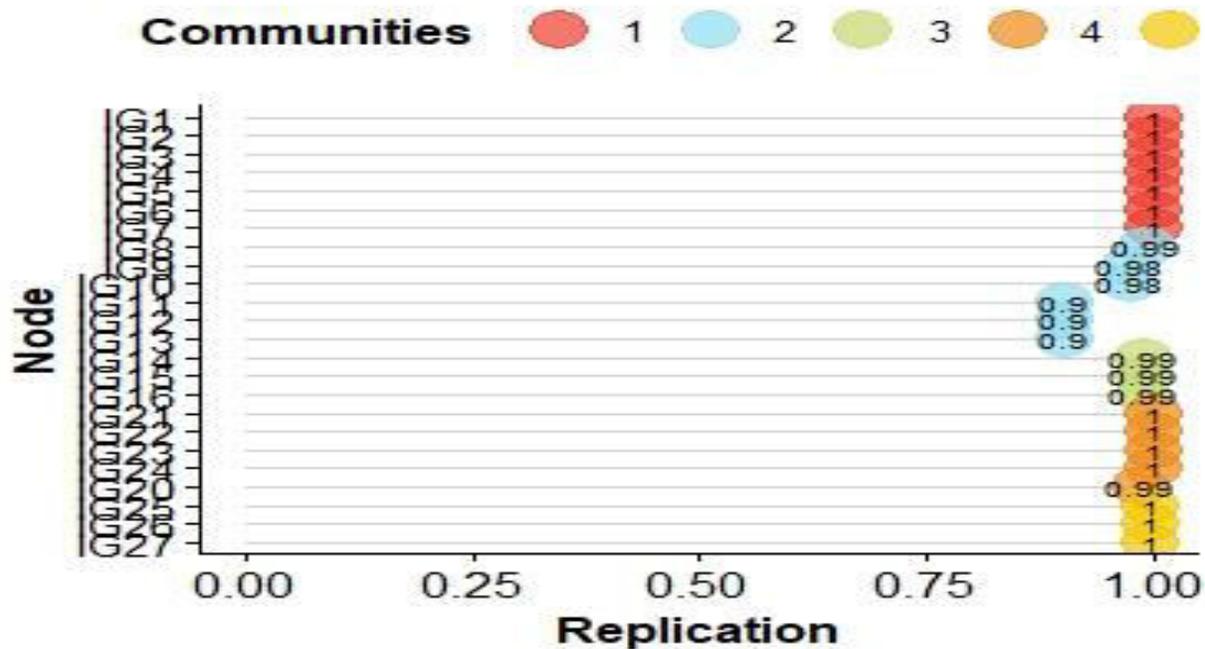


Fig.5 Bootstrapped Replicate Sample Difference

As evident from the above table, and Fig 5, four dimensions have nearly perfect structural consistency, whereas 1 dimension has got very near to perfect structural consistency. The above values can range from 0 to 1 and correspond to the proportion of times that each empirically derived dimension is exactly recovered from the replicate bootstrap samples. A look into the data reveals that each dimension shows a higher structural consistency ranging from 0.9 to 1. Thus the dimension structure extracted using EGA has high structural consistency as per the original EGA results.

Item Stability within Dimensions

In most simple terms, the item stability refers to the proportion of the times, each of the item is retained in its empirically derived dimension across the replicated samples. The table below shows the item-wise stability within dimensions/clusters.

Table.4 Item Stability

Item/Dimension	Dim1	Dim2	Dim3	Dim4	Dim5	Dim6
IG1	1.000	0.000	0.00	0.000	0.000	0.000
IG2	1.000	0.000	0.00	0.000	0.000	0.000
IG3	1.000	0.000	0.00	0.000	0.000	0.000
IG4	1.000	0.000	0.00	0.000	0.000	0.000
IG5	1.000	0.000	0.00	0.000	0.000	0.000
IG6	1.000	0.000	0.00	0.000	0.000	0.000
IG7	1.000	0.000	0.00	0.000	0.000	0.000
IG8	0.004	0.992	0.00	0.000	0.004	0.000
IG9	0.020	0.976	0.00	0.000	0.004	0.000
IG10	0.020	0.976	0.00	0.000	0.004	0.000
IG11	0.000	0.904	0.00	0.000	0.000	0.096
IG12	0.000	0.904	0.00	0.000	0.000	0.096
IG13	0.000	0.904	0.00	0.000	0.000	0.096
IG14	0.000	0.004	0.99	0.000	0.000	0.006
IG15	0.000	0.004	0.99	0.000	0.000	0.006
IG16	0.000	0.004	0.99	0.000	0.000	0.006
IG20	0.000	0.006	0.00	0.988	0.004	0.002
IG21	0.000	0.000	0.00	1.000	0.000	0.000
IG22	0.000	0.000	0.00	1.000	0.000	0.000
IG23	0.000	0.000	0.00	1.000	0.000	0.000
IG24	0.000	0.000	0.00	1.000	0.000	0.000
IG25	0.000	0.000	0.00	0.002	0.998	0.000
IG26	0.000	0.000	0.00	0.002	0.998	0.000
IG27	0.000	0.000	0.00	0.002	0.998	0.000

It is clear from the above table that the nodes 1 to 7 are loading in cluster/dimension 1 in the replicate sample 100 percent times, while as nodes 8 to 13 are loading with cluster 2, with a proportion of 90 to 99 % times. Similarly, nodes, 14, 15 and 16 are loading with cluster 3 with a proportion of 99 % times, nodes 20, 21, 22, 23 and 24 are loading with cluster 4 with a proportion of 99 to 100 % times and nodes 24, 25 and 26 loading with cluster 5 with a proportion of 99 % times in the bootstrapped sample. Hence all these items are highly stable. Thus it can be concluded from the table that all the nodes are showing consistent loading with their original cluster/dimension.

Estimation of Centrality Indices

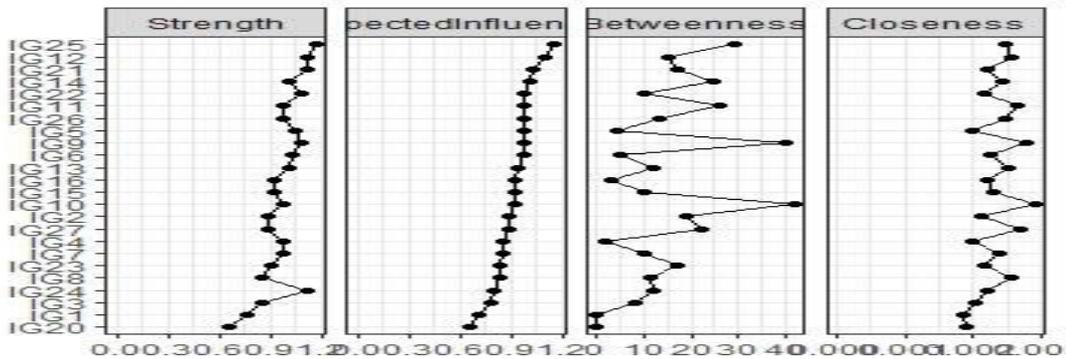


Fig. 6: Estimates of Centrality Indices

As clear from the centrality indices in Fig 6 above, the nodes 24 and 25 has the highest strength of 0.9 and 1 respectively with highest node 25 having the highest expected influence of 1. The strength of the nodes is in the range of 0.6 to 1 and the expected influence of the nodes is also in the range of 0.6 to 1. The strength centrality denotes number of direct connections of a node in a network. Expected influence measure the sum of all the edges extending from a given node in a network. Robinaugh, Millner, & McNally (2016). The closeness is determined by the path length, which implies the number of edges it takes to move from one node to another. The betweenness shows the relative number of shortest paths passing through the respective nodes in the network. It is revealed that nodes 9 and 10 has the highest betweenness and closeness among all the other nodes in the network. The perusal of the values of all the centrality indices including the strength, expected influence, betweenness and closeness clearly indicate that the values are fairly effective. It is pertinent to mention here that the nodes 24 and 25 score highest in strength, while as node 25 scored highest in expected influence. Among the betweenness and closeness, the nodes 9 and 10 showed the highest scores.

Estimation of the Accuracy of the Edges of Internet Gratification Network Structure

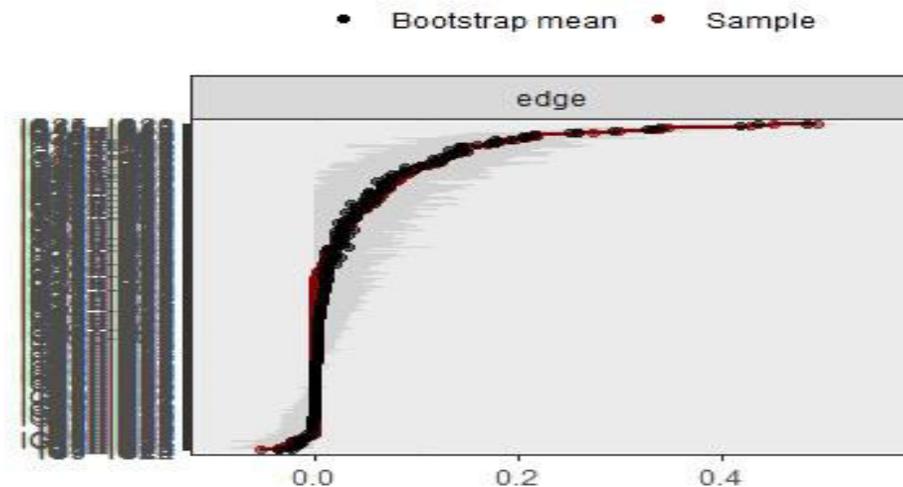


Fig. 7: Estimation of Edge Weight Accuracy Non-Parametric Bootstrapped Confidence Interval Plot of Internet Gratification Network

It is clear from the Fig. 7 above that all the edge weights for almost all the nodes in the network are close to their bootstrap mean, thereby implying that the values fall within the acceptable level of accuracy.

Estimation of Stability of the Edges of Internet Gratification Network

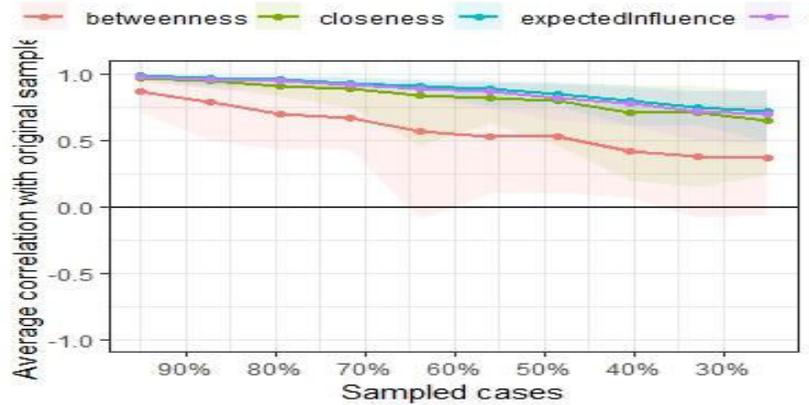


Fig.8:Stability ofEdges Plot of Internet Gratification Network

The bootstrapped replication was conducted for 500 times, the correlation with respect to edges stability between original and reduced sampled cases was found to be stable even after the sampled cases were reduced to 40% of the original sample of 662 which implies that the order of edge weights between nodes as displayed in figure 8 remained intact even when the sample size is reduced to 265 samples. The Correlation Stability Coefficient revealed between 0.5 to 1 is well within the acceptable benchmark of 0.5 (Epskamp, Borsboom and Fried, 2018)

Discussion:

In the present study, the validation of Internet Gratifications scale was done on a population of 662, degree college students using the network psychometric approach, an approach that potentially complements the traditional psychometrics using latent variable approach. Originally the scale consisted of 6 dimensions and 27 items as developed and validated by Dhir et al (2016) on Indian adolescents. The present study revealed a 5 dimensional structure for the internet gratification scale. The community structure was explored through Exploratory Graph Analysis, which is a community detection algorithm and subsequently confirmed through the ordinal confirmatory factor analysis using the (WLSMV) for the estimation of Polychoric correlation, using *EGAnet* package of R Studio. The initial EGA run yielded a fragmented structure, with all the nodes loading on to their respective clusters/dimensions, except the nodes 17, 18 and 19 of Cluster 4, Exposure showing merging with Cluster 1. Hence the EGA was run for the second time after removing the nodes 17, 18 and 19 showing cross loadings. The final network yielded a clear 5 cluster/dimension network structure wherein all the nodes show loadings within their respective clusters. Thus yielding a 5 cluster and 24 node structure. The deletion of exposure dimension can be ascribed to the fact that internet is not so much commonly used for the educational and job opportunities by the college students owing to the poor ICT literacy among students (Magray and Nadeem, 2017). The factor structure yielded was then confirmed through ordinal Confirmatory Factor Analysis. We tested the dimensionality of the Internet Gratification scale using the EGA function. The bootstrapped EGA analysis revealed that all the 5 dimensions along with their respective items loaded exactly the same way as their loading shown in the final network plot with a proportion of 90-100%. The structural consistency coefficient revealed in the study was in the range of 0.9 to 1 for all the five dimensions. The structure revealed stability of the structure dimensionally and item wise. Additionally, centrality indices were estimated along with edge weights. All the parameters were reported in the benchmark range. Hence the Internet Gratification Scale is validated using the Network Psychometric approach. The validated 5-dimension Gratification scale comprising of gratifications including Information Seeking, Connection, Entertainment, Social Influence and Coordination are persistent with

the existing literature in the field of internet research (Diddi and Larose (2006), Roy (2009), Kaye (2010), Cheng et al (2013), Dhir et al (2017), Moon & An (2022). Although the gratifications including coordination and social influence are a recent addition to the internet gratification literature (Dhir et al, 2016). As discussed above, the deletion of Exposure dimension can be ascribed to the poor ICT literacy among the college students (Magray and Nadeem, 2017). This scale has been validated on degree college students and hence can be employed in the higher educational context by researchers across the globe. This scale can be potentially used for the assessment of gratification types among the college students, that will guide the educationists and technologists in designing best fit technological integration models in colleges and Universities for the optimum use of internet based educational technologies.

Since the study employed only college students of Jammu and Kashmir Union Territory for the validation of Internet Gratification scale, therefore serious caution is to be exercised in the generalizability of the findings of the study. More so, the samples were drawn from Government Degree Colleges of Jammu and Kashmir, Union Territory, the inclusion of private college students were not considered. Third the measurement invariance testing with respect to gender has not been carried.

We recommend the study to be conducted on large sample size drawn from a more inclusive age group involving students from different levels of education.

Conclusion:

The validation of Internet Gratification Scale in J&K Union Territory is the first of its kind study using the novel approach of network psychometrics. This validated scale is expected to serve as a reference tool for the researchers and academicians in general and internet researchers, and psychologists in particular. It is expected that the validation of this scale will add value to the field of psychometrics in India and would largely benefit the researchers across the globe. The study has employed the network psychometric approach with the intention to augment the existing validation process and keeping the limitations of traditional psychometrics under consideration.

Conflict of Interest:

The author(s) declare no potential conflict of interest in the present study. The present study does not involve receipt of any sort of funding from any agency.

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